

CLAIMS

What is claimed is:

- 1 1. A method of making a heat sink, the method comprising:
2 obtaining a quantity of thermally conductive metal; and
3 forming from the quantity a plurality of fins extending outwardly from a
4 core in an asymmetric pattern, the core having a central axis, each fin having a base
5 coupled to the core substantially parallel to the central axis.

- 1 2. The method recited in claim 1, wherein the fins are formed curved, the
2 method comprising:
3 bending a portion of each fin in substantially the same relative direction.

- 1 3. The method recited in claim 2, wherein before bending the method
2 comprises:
3 separating the portion of each fin from the core.

- 1 4. The method recited in claim 3, wherein separating comprises:
2 forming a cavity or channel in the core a predetermined distance along the
3 central axis.

- 1 5. The method recited in claim 1, wherein the fins are formed straight, the
2 method comprising:
3 bending a portion of each fin in substantially the same relative direction.

- 1 6. The method recited in claim 5, wherein before bending the method
2 comprises:
3 separating the portion of each fin from the core.

- 1 7. The method recited in claim 6, wherein separating comprises:
2 forming a cavity or channel in the core a predetermined distance along the
3 central axis.
- 1 8. The method recited in claim 1, wherein forming comprises extruding the
2 quantity of thermally conductive metal through an extrusion die.
- 1 9. The method recited in claim 1, wherein the thermally conductive metal
2 comprises aluminum, and wherein the fins have an aspect ratio in the range of 10:1
3 to 12:1 or in the range of 14:1 to 16:1.
- 1 10. The method recited in claim 1, wherein the thermally conductive metal
2 comprises aluminum, and wherein the radius at the base of the fins is in the range of
3 1.0 to 1.2 millimeters.
- 1 11. The method recited in claim 1, wherein forming comprises making a central
2 cavity within the core.
- 1 12. The method recited in claim 11, wherein forming comprises extruding the
2 quantity of thermally conductive metal through an extrusion die.
- 1 13. The method recited in claim 12 and further comprising:
2 inserting a thermal plug into the cavity.
- 1 14. The method recited in claim 13, wherein the thermal plug comprises copper.
2
- 1 15. A method comprising:
2 forming from thermally conductive metal a plurality of fins extending
3 outwardly from a core in an asymmetric pattern, the core having a central axis, each
4 fin having a base coupled to the core substantially parallel to the central axis.

1 16. The method recited in claim 15, wherein the fins are formed curved, the
2 method comprising:
3 bending a portion of each fin in substantially the same relative direction.

1 17. The method recited in claim 16, wherein before bending the method
2 comprises:
3 separating the portion of each fin from the core.

1 18. The method recited in claim 17, wherein separating comprises:
2 forming a cavity or channel in the core a predetermined distance along the
3 central axis.

1 19. The method recited in claim 15, wherein the fins are formed straight, the
2 method comprising:
3 bending a portion of each fin in substantially the same relative direction.

1 20. The method recited in claim 19, wherein before bending the method
2 comprises:
3 separating the portion of each fin from the core.

1 21. The method recited in claim 20, wherein separating comprises:
2 forming a cavity or channel in the core a predetermined distance along the
3 central axis.

1 22. A method of making a heat sink comprising:
2 forming a core having a central axis and a surface to thermally contact a
3 heat-generating component; and
4 forming from thermally conductive metal a plurality of fins extending
5 outwardly from the core, each fin having a base and a tip, wherein the bases are
6 coupled to the core substantially parallel to the central axis, wherein the tips define
7 the periphery of a face to face the component, and wherein the face comprises inter-
8 fin openings.

1 23. The method recited in claim 22, wherein the fins are formed curved, the
2 method comprising:
3 bending a portion of each fin in substantially the same relative direction.

1 24. The method recited in claim 23, wherein before bending the method
2 comprises:
3 separating the portion of each fin from the core.

1 25. The method recited in claim 24, wherein separating comprises:
2 forming a cavity or channel in the core a predetermined distance along the
3 central axis.

1 26. The method recited in claim 22, wherein the fins are formed straight, the
2 method comprising:
3 bending a portion of each fin in substantially the same relative direction.

1 27. The method recited in claim 26, wherein before bending the method
2 comprises:
3 separating the portion of each fin from the core.

- 1 28. The method recited in claim 27, wherein separating comprises:
- 2 forming a cavity or channel in the core a predetermined distance along the
- 3 central axis.